## **CLAIMS**

## What is claimed is:

- 1. An immunogenic composition comprising: a means for providing protection to an animal against a pathogen of *Yersinia* origin; and a pharmaceutically suitable excipient.
- 2. The immunogenic composition of claim 1, further comprising LcrV, the F1 antigen, YopD, an attenuated *Yersinia* bacterium, a recombinant carrier bacterium including a nucleic acid encoding a YscF protein, an inactive or killed *Yersinia* bacterium or combinations thereof.
  - 3. The immunogenic composition of claim 1, further comprising an adjuvant.
- 4. The immunogenic composition of claim 1, further comprising PrgI, MxiH, EscF or combinations thereof.
  - 5. The immunogenic composition of claim 1, wherein the pathogen is Yersinia pestis.
- 6. The immunogenic composition of claim 1, wherein the means for providing protection comprises an isolated or recombinant YscF protein.
- 7. A health program for immunizing subjects in a population or a sub-population against *Yersinia* infections, said health program comprising: administering the immunogenic composition of claim 1 to at least some of the subjects of the population or the sub-population.
- 8. The immunogenic composition of claim 1, wherein the means for providing protection to an animal against a pathogen of *Yersinia* origin is a His-tagged YscF protein.

- 9. An immunogenic composition for providing protection to an animal against a pathogen of *Yersinia* origin comprising: a recombinant YscF protein or a protective epitope thereof; and a pharmaceutically suitable excipient.
- 10. The immunogenic composition of claim 9, further comprising LcrV, the F1 antigen, YopD, an attenuated *Yersinia* bacterium, a recombinant carrier bacterium including a nucleic acid encoding a YscF protein, an inactive or killed *Yersinia* bacterium or combinations thereof.
  - 11. The immunogenic composition of claim 9, further comprising an adjuvant.
- 12. The immunogenic composition of claim 9, further comprising PrgI, MxiH, EscF or mixtures thereof.
- 13. The immunogenic composition of claim 9, wherein the recombinant YscF comprises His-tagged YscF.
- 14. A health program for immunizing subjects in a population or a sub-population against *Yersinia* infections, said health program comprising: administering the immunogenic composition of claim 9 to at least some of the subjects of the population or the sub-population.
- 15. A composition produced by a process, the process comprising:
  providing an expression vector including a nucleotide sequence encoding a YscF protein capable of providing protection to an animal against a pathogen of *Yersinia* origin;
  expressing the nucleotide sequence to produce the YscF protein;
  collecting the YscF protein; and
  mixing the YscF protein with a suitable excipient.

- 16. The composition produced by the process of claim 15, where the YscF protein is His-tagged YscF of SEQ ID NO: 12.
- 17. The composition produced by the process of claim 15, further comprising mixing LcrV, the F1 antigen, YopD or combinations thereof with the suitable excipient.
- 18. The composition produced by the process of claim 15, further comprising mixing an adjuvant with the suitable excipient.
- 19. The composition produced by the process of claim 15, further comprising mixing PrgI, MxiH, EscF or combinations thereof with the suitable excipient.
- 20. An isolated or recombinant YscF protein capable of providing protection to an animal against a pathogen of *Yersinia* origin.
- 21. The isolated or recombinant YscF protein of claim 20, wherein the isolated or recombinant YscF protein is encoded by a nucleotide sequence selected from the group of nucleotide sequences consisting of SEQ ID NO: 11 and SEQ ID NO: 13.
  - 22. A His-tagged YscF protein.
- 23. The His-tagged YscF protein of claim 22, wherein the peptide sequence is SEQ ID NO: 12.
- 24. An isolated or recombinant nucleic acid molecule encoding a YscF protein capable of providing protection to an animal against a pathogen of *Yersinia* origin.
- 25. The isolated or recombinant nucleic acid of claim 24, wherein an amino acid sequence of the isolated or recombinant protein is SEQ ID NO: 12.

- 26. An isolated or recombinant nucleic acid capable of hybridizing to the isolated or recombinant nucleic acid molecule of claim 24 under stringent conditions.
  - 27. A cell transformed with the isolated or recombinant nucleic acid of claim 24.
- 28. The cell of claim 27, further comprising a promoter operatively linked to the isolated or recombinant nucleic acid sequence.
- 29. A process for producing antibodies capable of binding a YscF protein capable of providing protection to an animal against a pathogen of *Yersinia* origin, said process comprising: providing an expression vector including a nucleotide sequence encoding the YscF protein; expressing the nucleotide sequence to produce the YscF protein; collecting the YscF protein; mixing the collected YscF protein with a suitable excipient; and administering the YscF protein to a subject, thus generating antibodies against the YscF protein
- 30. The process according to claim 29, further comprising attaching an affinity marker to the YscF.
  - 31. The process according to claim 29, wherein the affinity marker is a His-tag.
- 32. A process for vaccinating a subject comprising: administering a means capable of providing protection to an animal against a pathogen of *Yersinia* origin to the subject in an amount sufficient to elicit an immune response.
- 33. The process according to claim 32, further comprising mixing the YscF protein with a pharmaceutically acceptable excipient.
  - 34. The process according to claim 32, wherein the pathogen is *Yersinia pestis*.

- 35. The process according to claim 32, wherein the YscF protein is His-tagged.
- 36. An antibody produced by the process according to claim 32.
- 37. The process according to claim 32, further comprising administering LcrV, the F1 antigen, YopD, an attenuated *Yersinia* bacterium, a recombinant carrier bacterium including a nucleic acid encoding a YscF protein, an inactive or killed *Yersinia* bacterium or combinations thereof to the subject in amount sufficient to elicit an immune response.